BUREAU OF SHIPS GROUP

TECHNICAL INSPECTION REPORT

U.S.S. BUTTE (APA68)

TEST ABLE

[redacted]

OPERATION CROSSROADS

DIRECTOR OF SHIP MATERIAL

JOINT TASK FORCE ONE

BUREAU OF SHIPS GROUP

TECHNICAL INSPECTION REPORT

Classification (~~Cancelled~~) (Changed to CONFIDENTIAL)
By Authority of Joint Chiefs of Staff Action of 15 April 1949
By Lt. Comdr. USN 8 Apr 1951

Atomic Support Agency
Washington, D. C. 20301

APPROVED:

CONFIDENTIAL E.X. Forest,
Captain, U.S.N.

[redacted]

USS BUTTE (APA68)

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OPERATION CROSSROADS. U.S.S. BUTTE (APA68)
TEST ABLE (U)

Bureau of Ships Group technical inspection rept.

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U.S.S. BUTTE (APA 68)

SHIP CHARACTERISTICS

Building Yard: Consolidated Steel Corp.; Wilmington, California.

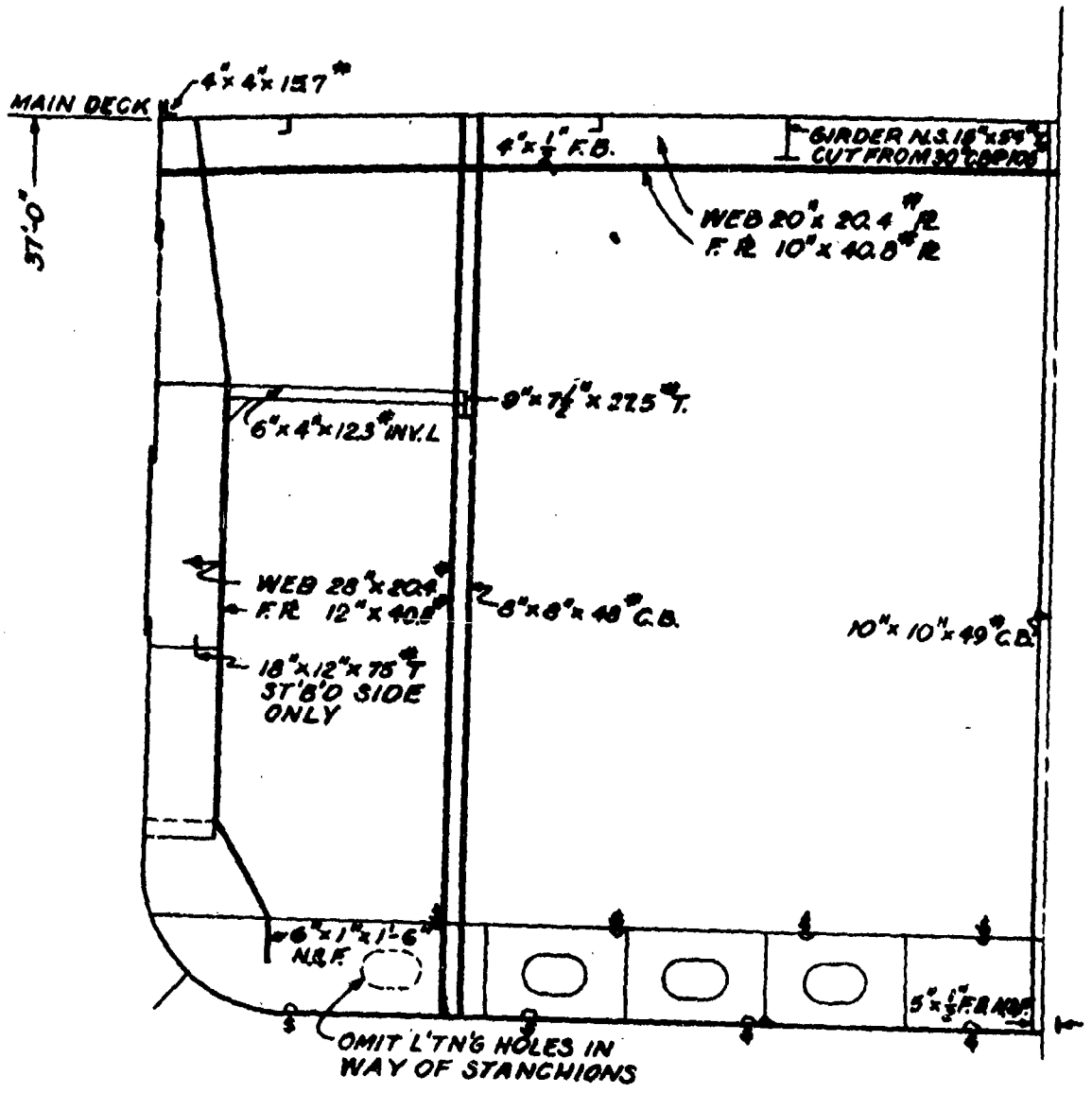
Commissioned: 21 November 1944.

HULL

Length Overall: 426 feet 0 inches.
Length on Waterline: 400 feet 0 inches.
Beam (extreme): 58 feet 0 inches.
Depth (molded to upper deck): 37 feet 0 inches.
Drafts at time of test: Fwd. 9 feet 6 inches.
Aft. 17 feet 6 inches.
Limiting displacement: 7,080 tons.
Displacement at time of test: 5,866 tons.

MAIN PROPULSION PLANT

Main Engines: Two sets of Westinghouse steam turbines, directly connected to Westinghouse main generators. Two main shaft motors.
Main Condensers: Two are installed in ship.
Boilers: Two Babcock and Wilcox boilers are installed in ship. 450 psi gauge - 750° F.
Propellers: Two are installed in ship.
Main Shafts; Two are installed in ship.
Ships Service Generators: Five are installed in ship.
Three - 250 KW. - 450 V. - A.C.
Two - 100 KW. - 120/240 V. - D.C.



FRAME 76 LOOKING AFT

MIDSHIP SECTION

TEST A

~~SECRET~~

U.S.S. BUTTE (APA 68)

8394

TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

1. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

There is no flooding, hence no change in draft or list.

(b) Structural damage.

HULL

Structural damage is superficial. Both stacks were slightly dished. Bulkhead 122 in the port main deck weather passageway and two doors in this bulkhead are dished. Exposed superstructure bulkheads having long spans are slightly dished. The flag bags is cracked. Miscellaneous canvas covers and wind screens on topside are torn and securing pipes are bent. One signal halyard is parted. There is considerable warping of some bulkheads and decks incident to two fires which burned 8 inch hawsers.

MACHINERY

No comment.

ELECTRICAL

There was no structural damage observed which affected electrical equipment.

(c) Other damage.

HULL

Not observed.

MACHINERY

A number of acetylene bottles stowed around the base of the after deck house were damaged incident to a fire in mooring lines in this locality. There is no other damage to any part of the machinery installation of this vessel.

ELECTRICAL

Approximately a dozen electric lamp bulbs were broken and the dial window of the gyro-compass repeater at the after steering station was cracked. Other electrical damage was a result of fire and consisted of the following:

1. Cables supplying lighting, general announcing, radio and radar equipment between frames 128 and 139 and frames 25 and 36 on the 01 and 02 decks, starboard side were burned and shorted.

2. Three lighting fixtures were damaged beyond repair by the fire.

3. Two general announcing reproducers were damaged beyond repair by the fires.

II. Forces Evidenced and Effects Noted.

(a) Heat.

HULL

Radiation from about 290 degrees relative and an elevation of about 8 degrees caused medium damage to exposed vertical painted surfaces. Only one coat of paint was damaged. Exposed line and cordage is rather heavily scorched.

MACHINERY

Heat blistered and scorched paint on deck machinery, and caused small fires in combustible material (cordage, balsa life rafts, etc.) topside. There is no evidence of heat in machinery spaces.

ELECTRICAL

Radiant heat on the port bow slightly scorched paint on exposed electrical equipment and cable. This radiant heat was not of sufficient duration to cause direct damage.

(b) Fires and explosions.

HULL

Two medium fires were ignited by direct heat radiation upon old 8" hawsers faked down on housetops. One fire originated atop the smoke pot house around frame 130. It destroyed seventeen life rafts and caused an acetylene cylinder to explode. The interior of the adjacent space, which used as a gear locker, was gutted. The other fire on top of the radar control station, frames 27 to 36, upper deck, burned a cargo net. Some lighting cable in the station and in the adjacent 40mm ammunition stowage, A-0101-M, was destroyed.

Three minor fires burned two cocoa matting fenders on the port side and a life raft on the upper deck, frame 67.

MACHINERY

A fire in mooring lines on top of the after deck house caused overheating and expansion of acetylene in bottles stowed around the base of the deck house. The thermostatic fuse in one of these bottles failed to function and the bottle exploded. The fuses in the other bottles functioned and the acetylene leaked out of these bottles.

ELECTRICAL

The radiant heat indicated above started fires in exposed deck gear which damaged electrical equipment as follows:

1. Fire on the top of the starboard side of the forward deck house frames 25 to 36 damaged wiring in the compartments below. Power cable in the forward radar control room was scorched but still operable. Cable for lighting in the forward 40mm ready

service room was grounded and short circuited. One lighting fixture was burned beyond repair.

2. Fire outboard at frame 68 on the 01 deck, port side scorched the cable to the boat davit limit switch. The circuit was not broken and the limit switch was still operable.

3. Fire on the top of the starboard side of the after deck house, frames 128 to 139, damaged wiring in the compartments below. Power cables to the after radar control room and to radio III were scorched but still operable. Cables for lighting in the radar control room, fan room, and passageway at frame 137 on the 01 deck are grounded and short circuited. Two lighting fixtures and two general announcing reproducers were damaged beyond repair.

A cylinder of acetyline gas exploded due to the heat of the fire, however, this caused no damage to electrical equipment.

(c) Shock.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

There was evidence that the vessel received shock since approximately a dozen electric lamps were shattered. There was no apparent direction of the shock.

(d) Pressure.

HULL

The blast emanated from 290 degrees relative. Critical plating weight appears to be about 7 1/2#M.S. Large spans of all exposed superstructure bulkheads are dished slightly. Doors

and door frames on exposed surfaces are dished slightly but are still operable.

There seems to be focusing of the pressure wave in some areas due to the arrangement of surrounding structure.

Numerous upper deck hatch boards were dislodged and fell to the main deck. In addition, one main deck pontoon in each hatch fell into the hold.

MACHINERY

The outer casing of the after stack was very slightly dished in. (Approximately one inch).

ELECTRICAL

The vessel received an air blast apparently from the same direction as the radiant heat. The only effect noted on electrical equipment as a result of this air blast was the cracking of the dial window of the gyro-compass repeater at the after steering station.

(e) Effects peculiar to the atomic bomb.

HULL

None.

MACHINERY

Heat of such intensity as to cause fires at thi distance from an explosion is apparently peculiar to the atom bomb.

ELECTRICAL

There were no effects noted that are considered peculiar to the atomic bomb other than radioactivity and the intensity of the radiant heat.

III. Results of Test on Target.

(a) Effect on machinery, electrical, and ship control.

HULL

Not observed.

MACHINERY

None. All machinery on this vessel has been operated since test A, and functions normally.

ELECTRICAL

The direct effects of the bomb on electrical equipment and ship control were negligible. Damage due to fire to cables, and lighting equipment could have been temporarily repaired by the ship's force by running temporary portable cables.

(b) Effect on gunnery and fire co. trol.

HULL

Not observed.

MACHINERY

No comment.

ELECTRICAL

Th damage to radar power cables seriously reduced the dependabilit of these cables although they still formed a complete circuit. Temporary cables could have been run by the ship's force to supply these circuits. Gunnery and fire control were otherwise unaffected by electrical damage. For damage to radar equipment see the Electronics report for this vessel.

(c) Effect on watertight integrity and stability.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

None.

(d) Effect on personnel and habitability.

HULL

Personnel probably would have received flash burns. The habitability of the ship would not have been affected.

MACHINERY

None below decks.

ELECTRICAL

It is considered that there would have been a few casualties to exposed topside personnel due to the radiant heat of the bomb and due to the air blast. The effects of radioactivity are unknown. There was no effect on habitability from the electrical standpoint other than the slight inconvenience due to the burned out lighting circuits.

(e) Effect on fighting efficiency.

HULL

None.

MACHINERY

None, as far as machinery is concerned.

ELECTRICAL

Other than possible personnel casualties and the damage to radar equipment due to fire, the effect on the vessel's fighting efficiency was negligible. Electrically, the only effect on fighting efficiency was the burning of radio and radar power cables. The ship's force could have run casualty power cables in these cases so that the effects would have been only temporary.

IV. General Summary of Observers' Impressions and Conclusions.

HULL

No comment.

MACHINERY

The BUTTE was outside the range of damage to machinery from the explosion in test A.

ELECTRICAL

Except for the breaking of a few lamps and the cracking of the gyro repeater dial window, all electrical damage to this vessel was of a secondary nature, being the result of fires. If personnel had been aboard the vessel, these fires could have easily been controlled and no damage to electrical equipment would have resulted.

V. Recommendations.

HULL

Study should be given to more adequate closure devices for cargo hatches.

MACHINERY

None.

ELECTRICAL

None.

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

There is no flooding, hence no change in draft or list.

(b) Structural damage.

Structural damage is superficial. Both stacks are slightly dished. Bulkhead 122 in the port main deck weather passageway and two doors in this bulkhead are dished. Exposed superstructure bulkheads having long spans are slightly dished. The flag bags are dished. The weld of one attachment of the starboard bag is cracked. Miscellaneous canvas covers and wind screens on topside are torn and securing pipes are bent. One signal halyard is parted. There is considerable warping of some bulkheads and decks incident to two fires which burned 8 inch hawsers.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Radiation from about 290 degrees relative and an elevation of about 8 degrees caused medium damage to exposed vertical painted surfaces. Only one coat of paint was damaged. Exposed line and cordage is rather heavily scorched.

(b) Fires and explosions.

Two medium fires were ignited by direct heat radiation upon old 8'' hawsers faked down on housetops. One fire originated

atop the smoke pot house around frame 130. It destroyed seventeen life rafts and caused an acetylene cylinder to explcde. The interior of the adjacent space, which was used as a gear locker, w as gutted. The other fire on top of the Radar Control Station, frames 27 to 36, upper deck, burned a cargo net. Some lighting cable in the station and in the adjacent 40MM ammunition . wage, A-0101-M, was destroyed.

Three minor fires burned two cocoa matting fenders on the port side and a life raft on the upper deck, frame 67.

(c) Shock.

None.

(d) Pressure.

The blast emanated from 290 degrees relative. Critical plating weight appears to be about 7 1/2# M.S. Large spans of all exposed superstructure bulkheads are dished slightly. Doors and door frames on exposed surfaces are dished slightly but are still operable.

There seems to be focusing of the pressure wave in some areas due to the arrangement of surrounding structure.

Numerous upper deck hatch boards were dislodged and fell to the main deck. In addition, one main deck pontoon in each hatch fell into the hold.

(e) Effects peculiar to the atomic bomb.

None.

III. esults of Test on Target.

(a) Effect on machinery, electrical, and ship control.

Not observed.

(b) Effect on gunnery and fire control.

Not observed.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

Personnel probably would have received flash burns. The habitability of the ship would not have been affected.

(e) Effect on fighting efficiency.

None.

IV. General Summary.

No comment.

V. Recommendations.

Study should be given to more adequate closure devices for cargo hatches.

VI. Instructions for loading the vessel specified the following:

ITEM	LOADING
Fuel oil	95%
Diesel oil	95%
Ammunition	100%
Potable and reserve feed water	95%
Salt water ballast	None.

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ship's Force" issued by

the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

(a) Overall condition.

Damage to the vessel is superficial. Light topside plating is dished. Miscellaneous canvas covers and windshields are torn. There is considerable warping of some bulkheads incident to two fires which originated in 8" hawsers faked down on deck. Fires destroyed 18 life rafts, caused on acetylene bottle to burst, destroyed the deck gear stowed in the smoke pot house, and burned two cocoa matting fenders. General views of the ship are shown on pages 46 and 44.

(b) General area of hull damage.

Damage was confined to topside structure and equipment.

(c) Apparent causes of hull damage in each area.

Damage was caused by blast and radiant heat.

(d) Principal areas of flooding and sources.

None.

(e) Residual strength, buoyancy and effect of general condition of hull on operability.

B. Superstructure.

(a) Description of damage.

Large spans of exposed superstructure bulkheads are dished slightly. Doors and door frames on exposed surfaces are slightly dished but are still operable. (Photograph 1737-12, page 45).

The outer casing of both stacks are slightly dished with a maximum deflection of about 1/2 inch.

The port flag bag is dished on the outboard and after sides. The starboard flag bag is dished on the inboard side and the welded connection to the signal bridge is cracked. The adjacent railing is bent outboard and the canvas wind screen is torn off. The pipe to which the bottom of the screen was secured was torn loose at the connection to the bulkhead and was bent. (Photographs 1739-9, page 46 and 2103-5, page 47).

Other miscellaneous canvas covers and wind screens are torn. One signal halyard parted.

(b) Causes of damage in each area.

Damage mentioned under (a) was caused by blast.

(c) Evidences of fire in superstructure.

Two major fires occurred in the superstructure, as a result of direct heat radiation. The most serious damage occurred when a fire started in an old 8" hawser, faked down on the smoke pot house top at frame 130. (Photographs 2103-3, page 48 and 1738-7, page 49). This line burned as did 17 life rafts which were stowed on girder supports outboard of the deck house, (photographs 1823-6, page 50 and 1823-5, page 51) and also one tire on U.S. Army generator set. (Photograph 1823-3, page 52). The fire spread to the inside of the smoke pot house which was used as a deck gear locker and contained line, fenders, blocks, grease and other combustible materials. (Photographs 1738-8, page 53, 2103-11, page 54 , and 2103-12, page 55). All material within this house burned and the fibre glass insulation is ruined. The house sides and top are badly distorted by the heat. An acetylene bottle stowed on the outside of the house, starboard bulkhead, burst. (Photograph 1823-2, page 56). The starboard bulkhead of the after deck house and the 02 deck of the house frame 128-135 (s) is badly distorted from the heat of the fire. (Photograph 2100-1, page 57).

The second fire started in an 8" hawser faked out down on top of the forward deck house, frame 27-36. The fire ignited a cargo net and temperature within the 40MM R.S. Room A-101-M reached a maximum of 130 degrees F. (Photograph 1738-2, page 58). Heat was conducted through the insulation below the 02 deck and damaged the insulation on wiring in the Radar Control Station A-0103-C. (Photograph 1738-4, page 59).

(d) Estimate of relative effectiveness against heat and blast.

The critical plating weight for blast damage appears to be 7 1/2#.

(e) Constructive criticism of superstructure design or construction including important fittings and equipment.

No comment.

C. Turrets, Guns and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

Not applicable.

E. Weather Deck, (And Port and Starboard Weather Passageways On Main Deck).

(a) General condition of deck and causes of damage.

No damage. Scratch gages recorded slight movement of the upper deck, page 72.

(b) Usability of deck in damaged condition.

Not affected.

(c) Condition of equipment and fittings.

About 60 percent of the hatch boards for #1 and #2 cargo holds were dislodged from their supports and then fell back into the holds without distortion. (Photographs 2103-6, page 60, 2103-7, page 61, 2103-8, page 62, and 2103-9, page 63).

Three minor fires occurred burning two cocoa matting fenders on the port side and a life raft on the upper deck, frame 67. The life raft is about one quarter burned out on the inside, the cover remained nearly intact. (Photograph 1738-1, page 64). It is believed that this fire started from a spark from one of the other fires on the ship.

(d) Condition of weather passageways on main deck.

Bulkhead 122 on the main deck at the after end of the port weather passageway is deflected about three inches in way of door 1-122-4 and is slightly deflected in way of door 1-122-6. (Photograph 1738-9, page 65).

F. Exterior Hull.

No damage.

G. Interior Compartments (above w.l.).

One main deck pontoon cover in #1 and #2 hatches was dislodged and fell into the hold. (Photograph 2103-8, page 62). There is no other damage to interior compartments.

H. Armor decks and Miscellaneous armor.

Not applicable.

I. Interior Compartments (below w.l.).

No damage.

J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

None.

M. Ventilation.

No damage.

N. Ship Control.

No damage.

O. Fire Control.

No damage.

P. Ammunition Behavior.

No damage.

Q. Ammunition Handling.

No damage.

R. Strength.

No damage.

S. Miscellaneous.

No comment.

T. Coverings.

Radiation emanated from 290 degrees relative and an elevation of 8 degrees. (Photograph 1738-10, page 66).

Blistering and scorching of paint is peculiarly localized. A good deal of localization can be attributed to older paint or rust and/or waterstained paint. (Photographs 1739-1, page 67 , 1739-2, page 68, and 1739-8, page 69). Relatively fresh paint seems to be fairly resistant to scorching and blistering. Baked alkyd paint as typified by the coating on U.S. Army test equipment has practically no or very slight scorching discernable. Painted wood orcanvas showed far more blistering by radiation than did similarly placed steel surfaces. (Photograph 1739-8, page 69). Red striping paint (Toluidine-Toner) ground in Alkyd was practically vulnerable to radiation effect, having entirely burned off in three different places.

TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY

GENERAL SUMMARY OF MACHINERY DAMAGE

I. Target Condition after Test.

(a) Drafts after test; list; general areas of flooding, sources.

No data taken by machinery group.

(b) Structural damage.

No comment.

(c) Other damage.

A number of acetylene bottles stowed around the base of the after deck house were damaged incident to a fire in mooring lines in this locality. There is no other damage to any part of the machinery installation of this vessel.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Heat blistered and scorched paint on deck machinery, and caused small fires in combustible material (cordage, balsa life rafts, etc.) topside. There is no evidence of heat in machinery spaces.

(b) Fires and explosions.

A fire in mooring lines on top of the after deck house caused overheating and expansion of acetylene in bottles stowed around the base of the deck house. The thermostatic fuse in one of these bottles failed to function and the bottle exploded. The fuses in the other bottles functioned and the acetylene leaked out of these bottles.

(c) Shock.

No evidence.

(d) Pressure.

The outer casing of the after stack was very slightly dished in. (approximately one inch).

(e) Effects apparently peculiar to the atom bomb.

Heat of such intensity as to cause fires at this distance from an explosion is apparently peculiar to the Atom Bomb.

III. Effects of Damage.

(a) Effect on machinery and ship control.

None. All machinery on this vessel has been operated since Test A, and functions normally.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on water-tight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

None below decks.

(e) Total effect on fighting efficiency.

None, as far as machinery is concerned.

IV. General Summary.

The BUTTE was outside the range of damage to machinery from the explosion in Test A.

V. Preliminary Recommendations.

None.

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall condition.

The overall condition of the machinery was not changed by Test A.

(b) Areas of major damage.

None.

(c) Primary cause of damage in each area of major damage.

Not Applicable.

(d) Effect of target test on overall operation of machinery plant.

The test had no effect on the operation of the machinery plant.

B. Boilers.

1. Both boilers were completely inspected. No damage exists on any part of either boiler. Both boilers have been steamed since the test.

2. Hydrostatic tests applied to boiler #1 show the following results.

14 hours drop before test - from 450 to 185 lbs/sq. in.
24 hours drop after test - from 450 to 190 lbs/sq. in.

3. The results obtained where pressure was left on the boilers during Test A were: Steam pressure on #2 boiler at 0045 1 July, - 450 lbs/sq. in. Steam pressure on #2 boiler on the

afternoon of 2 July, - None. Hydrostatic pressure on #1 boiler at 0045 1 July, - 450 lbs/sq. in. Hydrostatic pressure on #1 boiler on the afternoon of 2 July, - 25 lbs/sq. in.

4. The only indication of damage was on the outer casing of the after stack, which was very slightly dished. (Approximately 1 inch).

C. Blowers.

All blowers were operated by steam after Test A at normal operating pressures and speeds. No damage was sustained.

D. Fuel Oil Equipment.

All fuel oil equipment was operated under normal conditions incident to the operation of the boilers. No indications of damage were found.

E. Boiler Feedwater Equipment.

All feedwater equipment was operated under normal conditions incident to the operation of the main machinery. Performance was normal.

F. Main Propulsion Machinery.

1. The main turbo-generators were jacked and spun freely. No evidence of damage was revealed.

2. Both main turbo-generators were operated with steam for approximately 1-1/2 hours. Operation was normal in all respects.

G. Reduction Gears.

This item is not applicable as this ship has electric drive.

H. Shafting and Bearings.

Visual inspection of shafting and bearings shows no damage. Both propellers were spun ahead and astern at 5 minute intervals for 1-1/2 hours. No change in condition due to Test A is evident.

I. Lubrication System.

Undamaged. The lubrication system operated satisfactorily under normal conditions.

J. Condensers and Air Ejectors.

Undamaged. All main and auxiliary condensers were tested under normal operation, and are satisfactory.

K. Pumps.

Undamaged. All pumps have been operated under service conditions and no change was found in their condition after Test A.

L. Auxiliary Generators (Turbines and Gears).

All ship's service generators were operated under load after Test A. They are undamaged.

M. Propellers.

Undamaged. The propellers were inspected from above the water and no damage was apparent. Performance was normal while the main propulsion shafting was being turned over.

N. Distilling Plant.

Undamaged. Both distilling plants have been operated at normal production rates after Test A.

O. Refrigeration Plant.

The refrigeration plant is in normal operation. No damage was sustained.

P. Winches, Windlasses, and Capstans.

Undamaged. Both anchor windlasses have been operated by letting out 90 fathoms of chain and hauling in. All winches, including those on the boat davits, have been operated and are satisfactory.

Q. Steering Engine.

Undamaged. The steering gear has been tested from all stations and its condition was found unchanged.

R. Elevators, Ammunition Hoists, Etc..

Undamaged. All ammunition hoists and the gasoline hoist have been operated satisfactorily under normal conditions since Test A.

S. Ventilation (Machinery).

Undamaged. All ventilating machinery has been operated under normal conditions since Test A, and found satisfactory.

T. Compressed Air Plant

Undamaged. The air compressors have been operated since Test A, and their performance under load is satisfactory.

U. Diesels (Generators and Boats).

Undamaged. The diesel generator has been operated under normal load since Test A, and found satisfactory.

V. Piping Systems.

Undamaged. Operating pressure has been applied to all piping systems since Test A.

W. Miscellaneous.

There was a fire in the mooring lines stowed on top of the after deck house. This fire caused overheating and expansion of acetylene in bottles nested around the base of the deck house. One bottle on the starboard side of the deck house exploded, the thermostatic fuse having failed to function. A similar bottle on the port side leaked, the fuse having functioned in this case.

There is no damage to any other miscellaneous equipment (laundry, galley, machine shop). All of this equipment was operated after Test A, and functions normally.

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

Drafts and lists were not observed. There was no flooding.

(b) Structural damage.

There was no structural damage observed which affected electrical equipment.

(c) Other damage.

Approximately a dozen electric lamp bulbs were broken and the dial window of the gyro-compass repeater at the after steering station was cracked. Other electrical damage was a result of fire and consisted of the following:

1. Cables supplying lighting, general announcing, radio and radar equipment between frames 128 and 139 and frames 25 and 36 on the 01 and 02 decks, starboard side were burned and shorted.

2. Three lighting fixtures were damaged beyond repair by the fire.

3. Two general announcing reproducers were damaged beyond repair by the fires.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Radiant heat on the port bow slightly scorched paint on exposed electrical equipment and cable. This radiant heat was not of sufficient duration to cause direct damage.

(b) Fires and explosions.

The radiant heat indicated above started fires in exposed deck gear which damaged electrical equipment as follows:

1. Fire on the top of the starboard side of the forward deck house frames 25 to 36 damaged wiring in the compartments below. Power cable in the forward radar control room was scorched but still operable. Cable for lighting in the forward 40MM ready service room was grounded and short circuited. One lighting fixture was burned beyond repair.

2. Fire outboard at frame 68 on the 01 deck, port side scorched the cable to the boat davit limit switch. The circuit was not borken and the limit switch was still operable.

3. Fire on the top of the starboard side of the after deck house, frames 128 to 139, damaged wiring in the compartments below. Power cables to the after radar control room and to radio III were scorched but still operable. Cables for lighting in the radar control room, fan room, and passageway at frame 137 on the 01 deck are grounded and short circuited. Two lighting fixtures and two general announcing reproducers were damaged beyond repair.

A cylinder of acetylene gas exploded due to the heat of the fire, however, this caused no damage to electrical equipment.

(c) Shock.

There was evidence that the vessel received shock since approximately a dozen electric lamps were shattered. There was no apparent direction of the shock.

(d) Pressure.

The vessel received an air blast apparently from the same direction of the radiant heat. The only effect noted on electrical equipment as a result of this air blast was the cracking of the dial window of the gyro-compass repeater at the after steering station.

(e) Any effects apparently peculiar to the atom bomb.

There were no effects noted that are considered peculiar to the atom bomb other than radioactivity and the intensity of the radiant heat.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

The direct effects of the bomb on electrical equipment and ship control were negligible. Damage due to fire to cables, and lighting equipment could have been temporarily repaired by the ship's force by running temporary portable cables.

(b) Effect on gunnery and fire control.

The damage to radar power cables seriously reduced the dependability of these cables although they still formed a complete circuit. Temporary cables could have been run by the ship's force to supply these circuits. Gunnery and fire control were otherwise unaffected by electrical damage. For damage to radar equipment see the Electronics report for this vessel.

(c) Effect on water-tight integrity and stability.

None.

(d) Effect on personnel and habitability.

It is considered that there would have been a few casualties to exposed topside personnel due to the radiant heat of the bomb and due to the air blast. The effects of radioactivity are unknown. There was no effect on habitability from the electrical standpoint other than the slight inconvenience due to the burned out lighting circuits.

(e) Total effect on fighting efficiency.

Other than possible personnel casualties and the damage to radar equipment due to fire, the effect on the vessel's fighting efficiency was negligible. Electrically, the only effect on fighting efficiency was the burning of radio and radar power cables. The ship's force could have run casualty power cables in these cases so that the effects would have been only temporary.

IV. General Summary of Observers' Impressions and Conclusions.

Except for the breaking of a few lamps and the cracking of the gyro repeater dial window, all electrical damage to this vessel was of a secondary nature, being the result of fires. If personnel had been aboard the vessel, these fires could have easily been controlled and no damage to electrical equipment would have resulted.

V. Any Preliminary General or Specific Recommendations of the Inspecting Group.

None.

DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

Approximately a dozen electric lamps were broken. Cables supplying lighting, general announcing, radio and radar equipment between frames 128 and 139 and frames 25 and 36 on the 01 and 02 decks, starboard side were burned and shorted. Three lighting fixtures and two general announcing speakers were damaged beyond repair by the fire.

(b) Areas of major damage.

The areas of major damage were between frames 128 and 139 and between frames 25 and 36 on the 01 and 02 decks, starboard side.

(c) Primary causes of damage in each area of major damage.

The primary cause of damage was radiant heat which started fires in exposed deck gear. These fires caused the damage to electrical equipment.

(d) Effect of target test on overall operation of electric plant.

1. The ship's service generator plant was not affected.

2. Engine and boiler auxiliaries were not affected.

3. Electric propulsion equipment was not affected.

4. Communications were not affected except for the loss of five general announcing speakers. Three of the five could have been quickly put back in operation by the ship's force running temporary cable. For effect on radio communications see the Electronics report for this vessel.

5. Fire control circuits were affected by the burning of power cable to both the forward and after radar control rooms. These circuits could have been repaired by the ship's force running casualty power cables.

6. Ventilation was not affected.

7. Lighting was slightly affected by the shattering of approximately a dozen lamps, the burning of three fixtures, and the burning of a few lighting cables.

(e) Types of equipment most affected.

Cable was the most affected. This was due to the fact that the cable was closer to the fires than other equipment and not due to any inherent weakness of the cable.

B. Electric Propulsion Rotating Equipment.

No damage.

C. Electric Propulsion Control Equipment.

No damage.

D. Generators - Ships Service.

No damage.

E. Generators - Emergency.

No damage. The emergency generator was operated during the test and continued to operate until out of fuel.

F. Switchboards, Distribution and Transfer Panels.

No damage.

G. Wiring, Wiring Equipment and Wireways.

Cable as follows was damaged by fire:

(a) Power cable to after radar control room, compartment C-0101, and to radio III, compartment C-0107, was scorched. Insulation had begun to run. Circuit was still intact, however, operation with the cable in its present condition is not recommended.

(b) Lighting cables 2F146-D and 2F146-A to passageway at frame 137 and fan room C-01013E were short circuited and grounded.

(c) Lighting cable 1XFE182 to radar control room, compartment C-0101, was short circuited and grounded.

(d) Lighting cable 4XFE184 to forward radar control room, compartment A-0103-C and 40MM ready service room, compartment A-0101-M, was grounded and short circuited.

(e) Power cable to the forward radar control room was scorched but still operable.

(f) Cables to general announcing speakers located in compartments C-0102A, C-0106-E and C-0101 were short circuited and grounded due to fire on after deck house.

(g) Cable to the limit switch on the boat davit at frame 68, port side of 01 deck was scorched but was still operable.

Complete repair of this cable damage would represent a major repair job for the ship's force, however, casualty power cable could have been run in a short time so that efficiency would have been only slightly reduced.

H. Transformers.

No damage.

I. Submarine Propelling Batteries.

Not Applicable.

J. Portable Batteries.

No damage.

K. Motors, Motor Generator Sets and Motor Controllers.

No damage.

L. Lighting Equipment.

(a) Approximately a dozen rough service lamps located throughout the ship were broken due to shock.

(b) Two lighting fixtures, steamtight, red globe type, mounted in the transverse passageway at frame 137 on the 01 deck were burned beyond repair.

(c) Steamtight, red globe fixture located in the passageway at frame 27, starboard side of the 01 deck, was burned beyond repair.

(d) A few fixtures were dulled and charred by the fire but were still operable.

M. Searchlights.

No damage.

N. Degaussing Equipment.

No damage.

O. Gyro Compass Equipment.

The Sperry Mark XV, mod 0 gyro repeater located

exposed at the after steering station, frame 140, centerline of the 02 deck, had its dial window cracked by the air blast.

The repeater was still operable and the dial readable.

P. Sound Powered Telephones.

No damage.

Q. Ship's Service Telephones.

Not Applicable.

R. Announcing Systems.

(a) Three IMC reproducers were non-operable due to their supply cables being burned. See Item G.

(b) One speaker, located exposed at frame 136 on the 03 level, was burned by the fire. All internal wiring was burned bare and the matching transformer was burnt beyond use. Upon disassembly the voice coil and diaphram were found to be undamaged.

(c) One speaker located in the radar control room, compartment C-0102-A, was burned beyond repair due to the fire on the deck above.

S. Telegraphs.

No damage.

T. Indicating Systems.

No damage.

U. I.C. and A.C.O. Switchboards.

No damage.

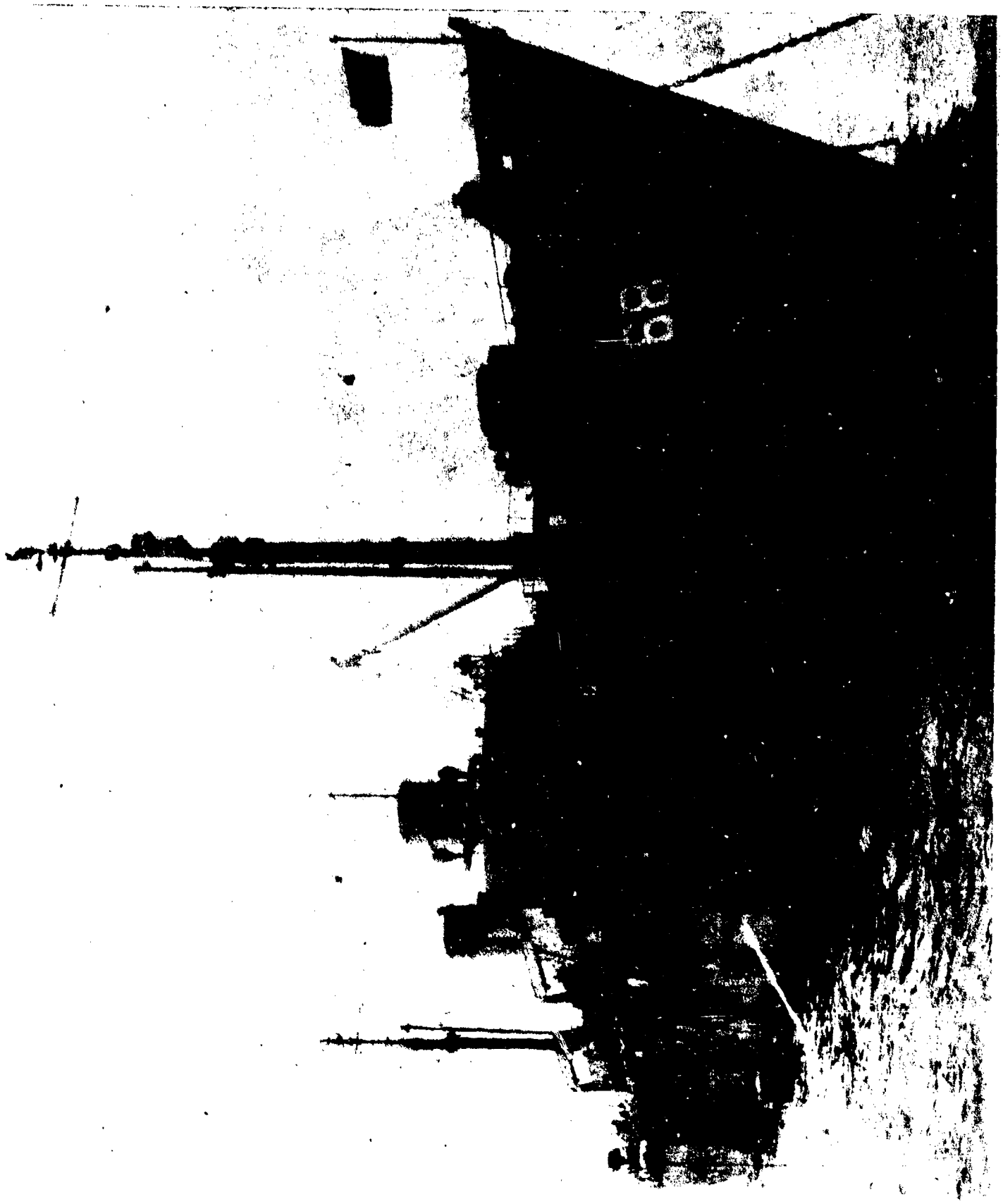
V. F.C. Switchboards.

No damage.

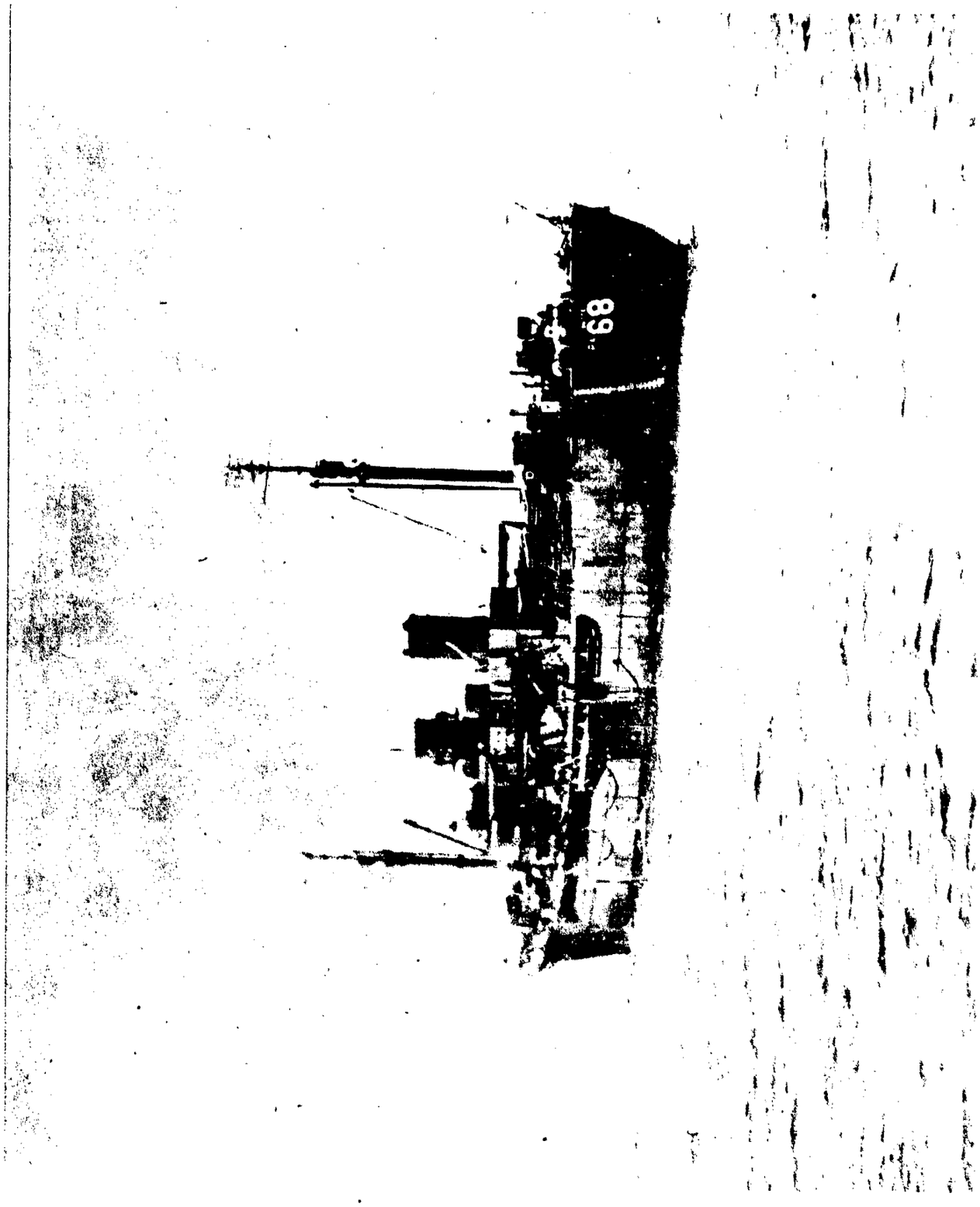
APPENDIX

PHOTOGRAPHS

TEST ABLE



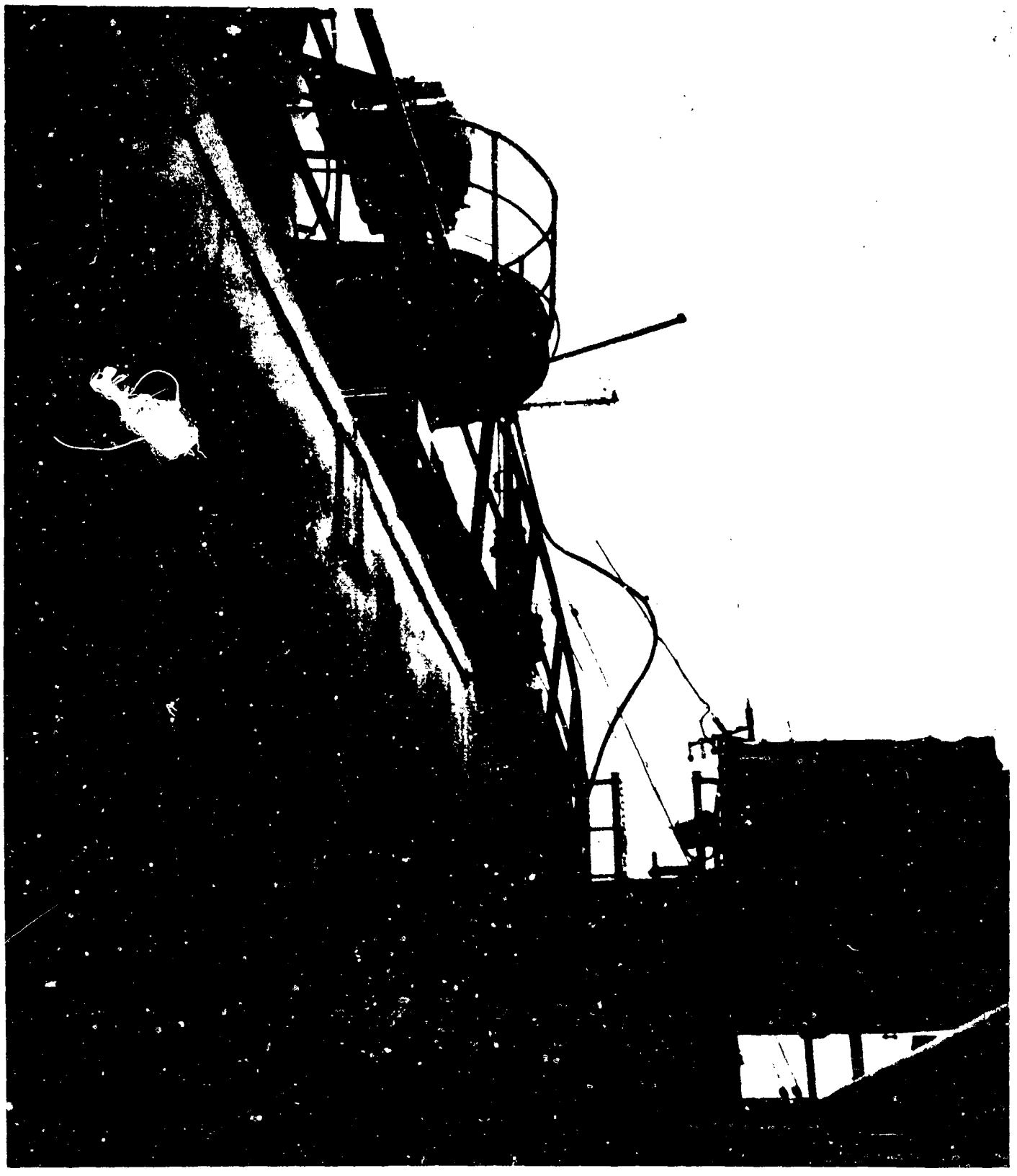
AA-CR-227-49-131. View from off starboard bow after Test A.



AA-CR-227-87-74. View from off port quarter after Test A.

AA-CR-65-1737-12. Dished door 03-41-6.

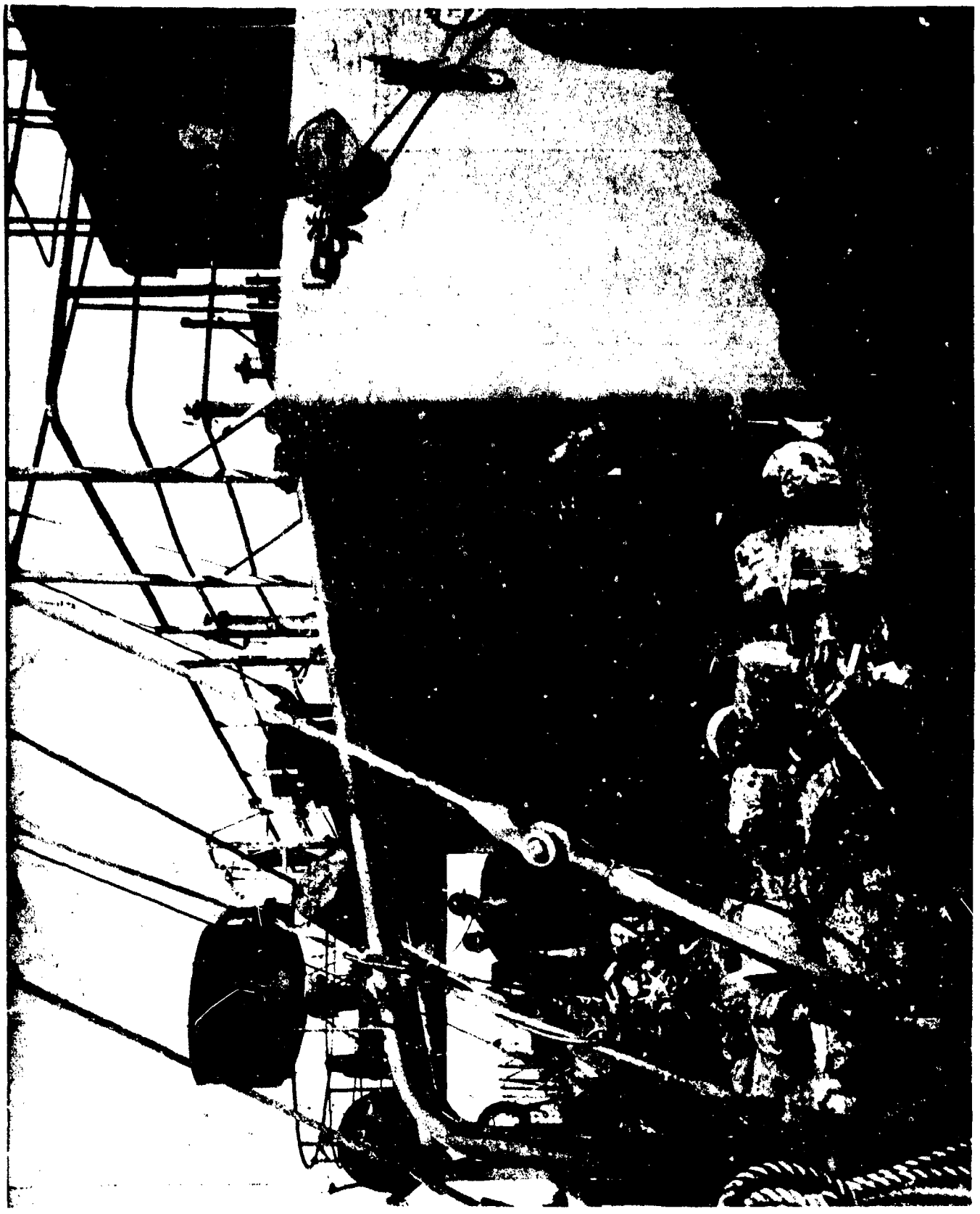
AA-CR-65-1739-9. Twisted securing pipe for wind screen.



AA-CR-88-2103-5. Twisted securing pipe for wind screen. Looking forward on navigating deck.

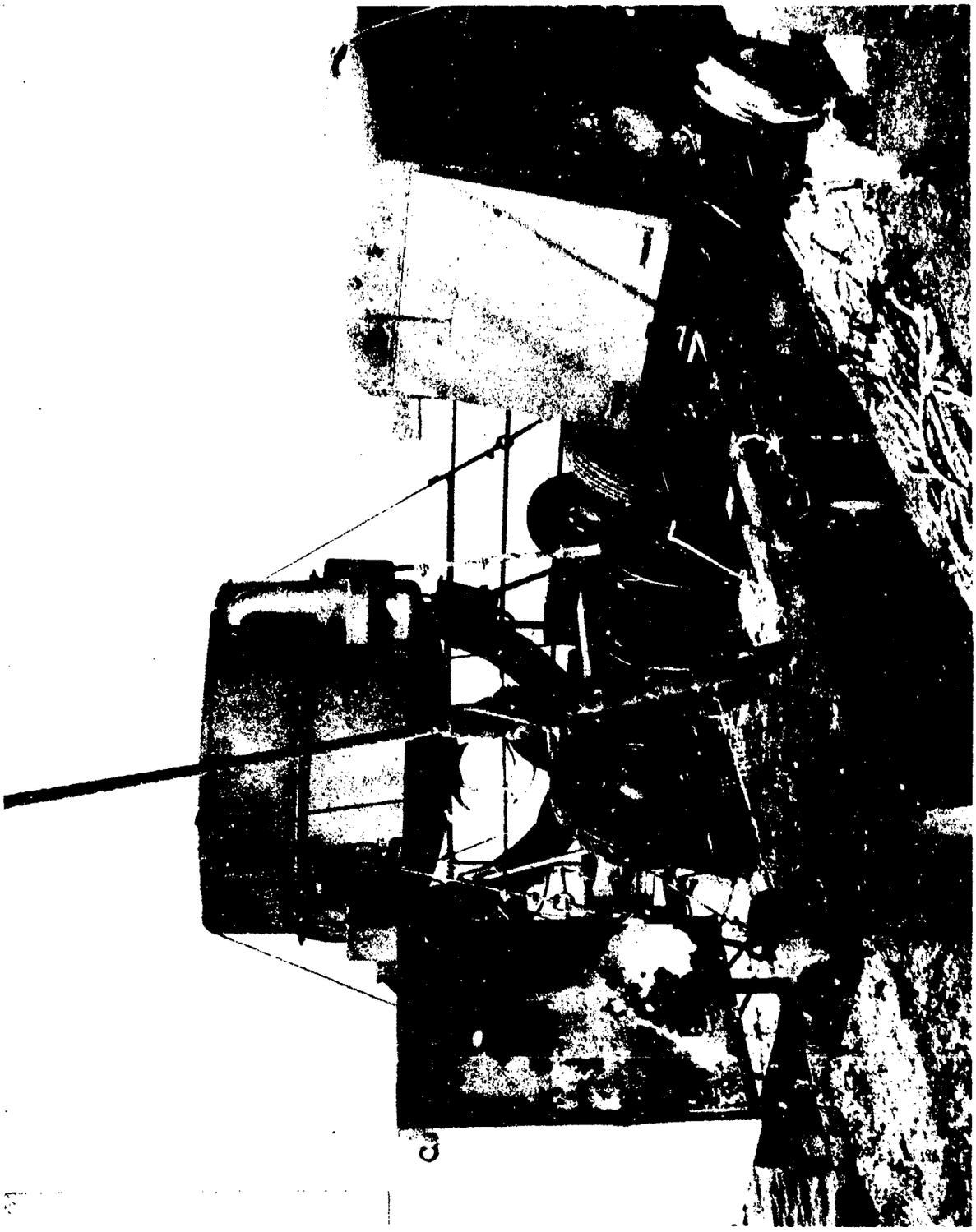
AA-CR-88-2103-3. Looking aft at general area of fire on upper deck and after deck house.

AA-CR-65-1738-7. Burned 8 inch hawser on top of smoke pot house, frame 130.



AA-CR-82-1823-6. Looking aft at fire debris on upper deck, frame 128, starboard.

AA-CR-82-1823-5. Looking forward, fire debris on upper deck, frame 140, starboard.



AA-CR-82-1823-3. Army gear on after deck house.

AA-CR-65-1738-8. Interior of smoke pot house, showing fire damage.

AA-CR-88-2103-11. Fire damage to interior of smoke pot house.

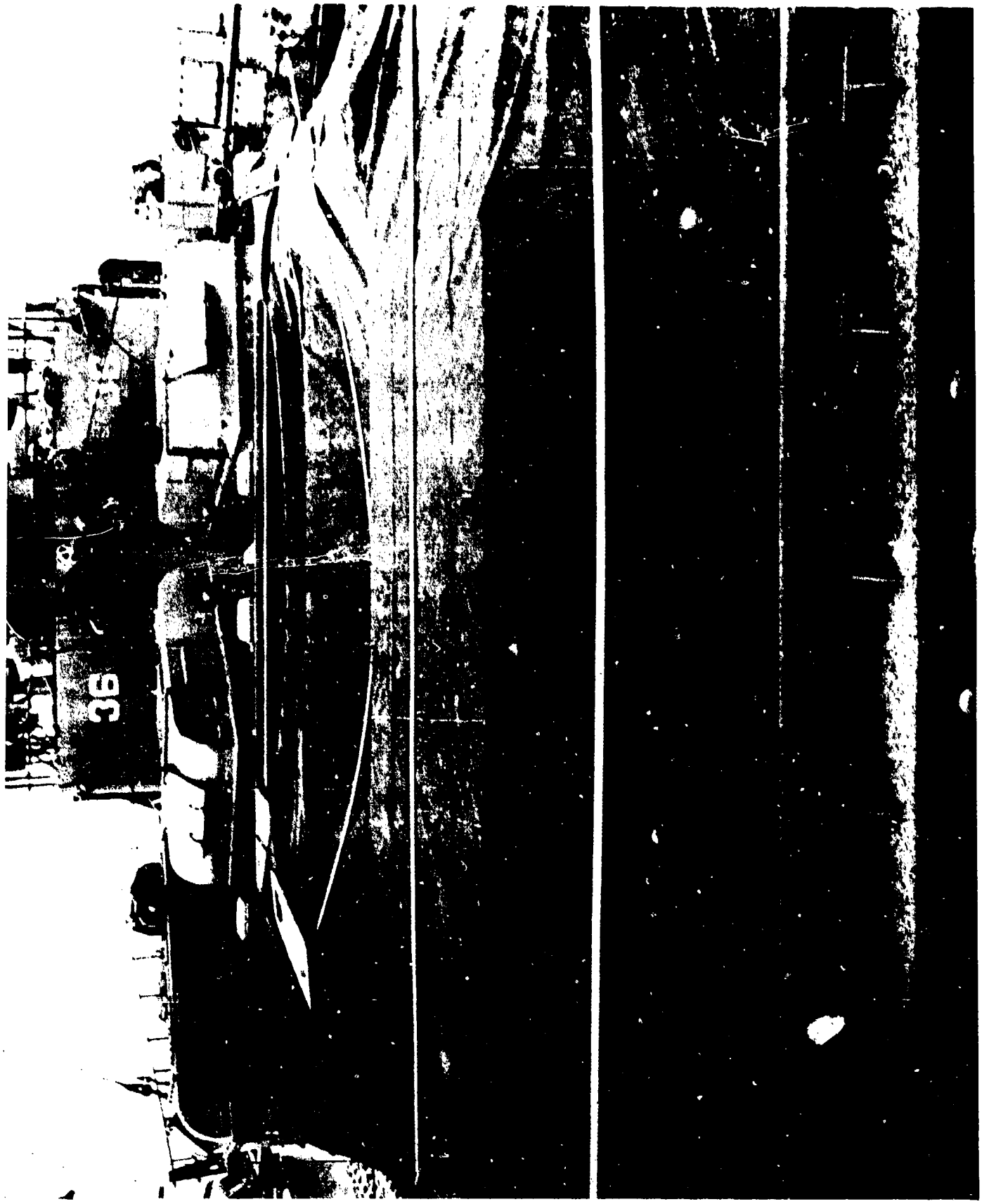
AA-CR-88-2103-12. Door to smoke pot house, fire damage.

AA-CR-82-1823-2. View of outside of smoke pot house, starboard, showing burst acetylene bottle.

AA-CR-88-2100-1. After deck house, starboard. Looking forward in fire area.

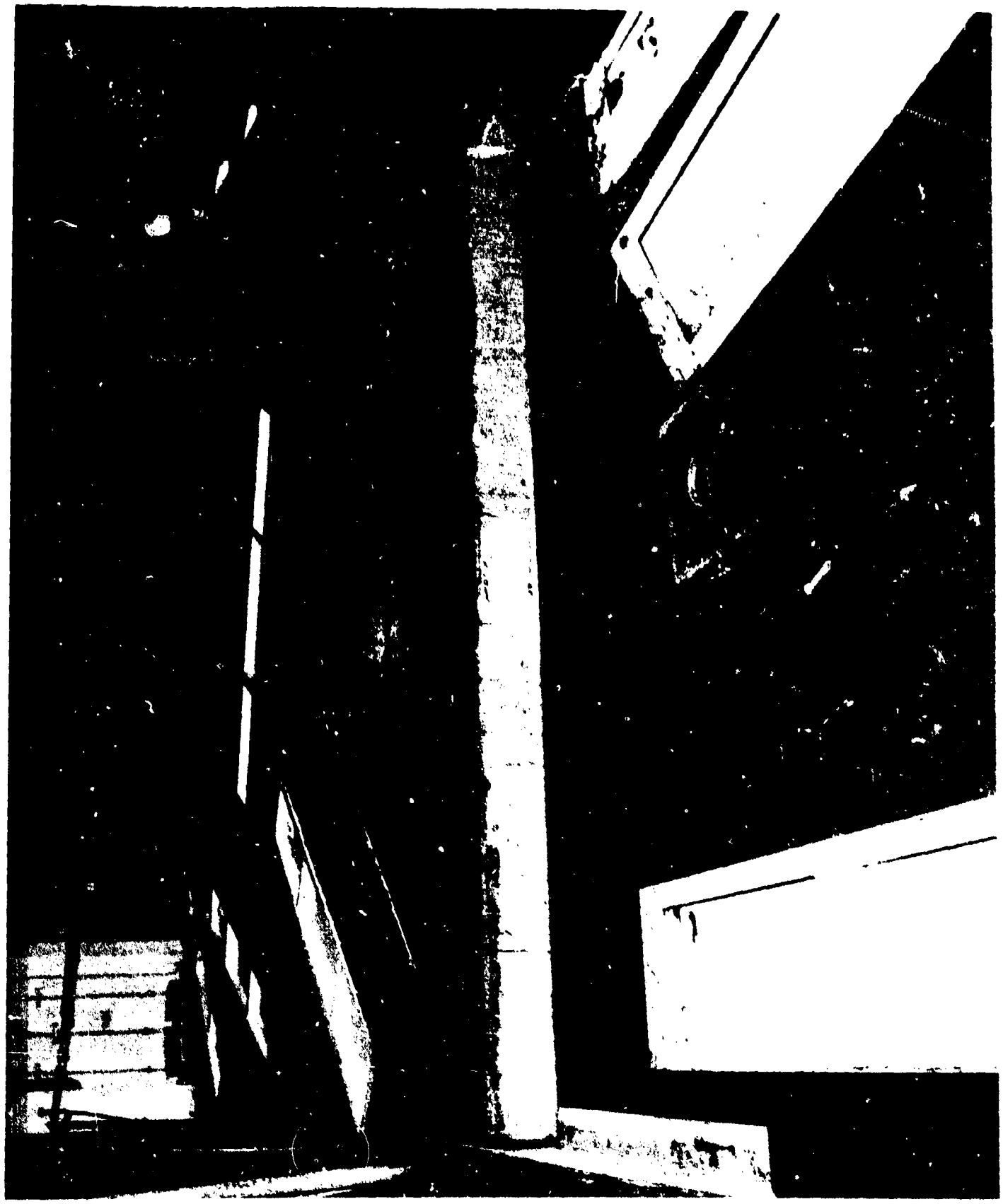
AA-CR-65-1738-2. Top of forward deck house showing remains of burned hawser.

AA-CR-65-1738-4. Fire damage to wiring in Radar Control Station. A-0103C.

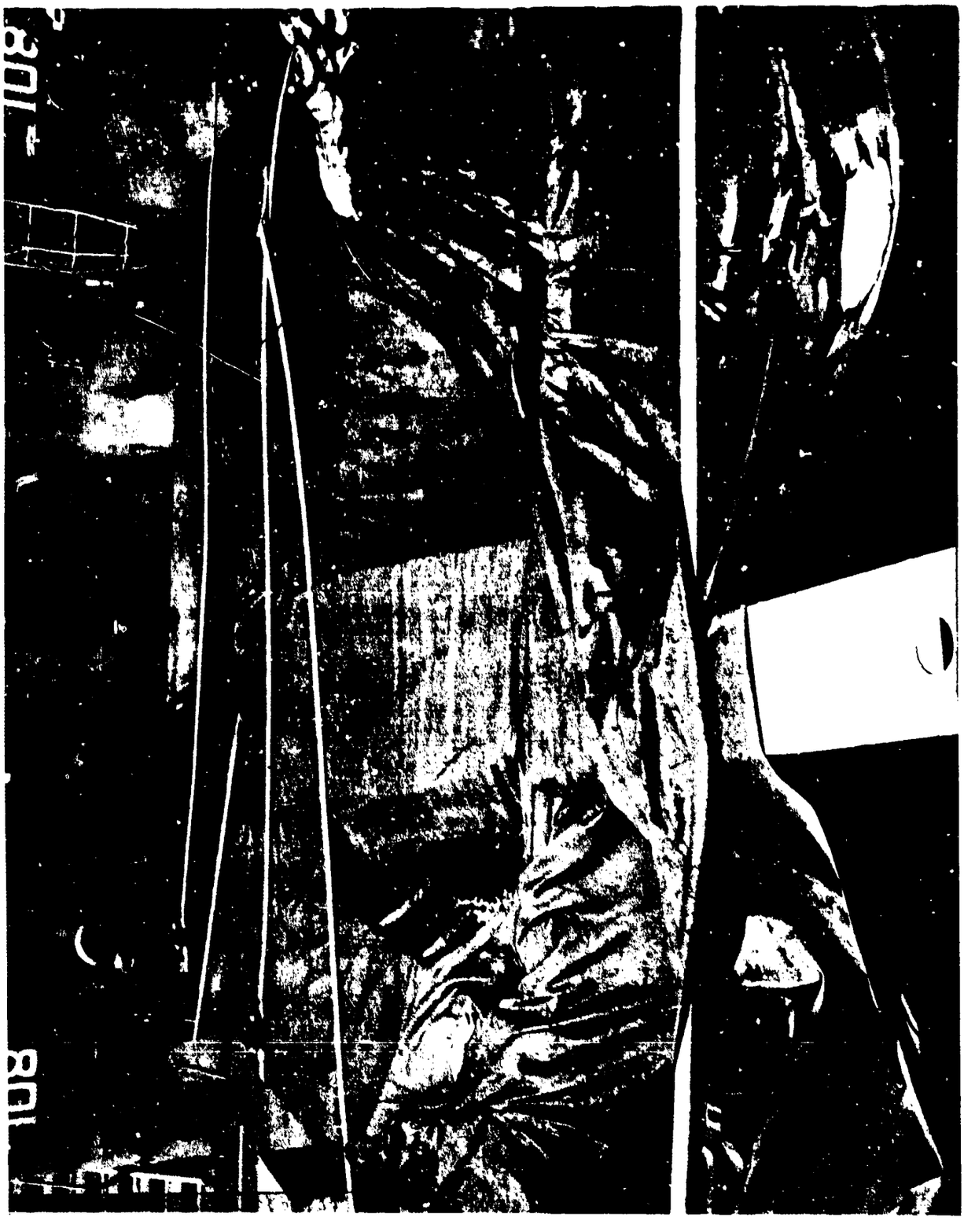


AA-CR-88-2103-6. No. 1 hatch cover, upper deck.

AA-CR-88-2103-7. No. 1 hatch cover, main deck, looking forward.

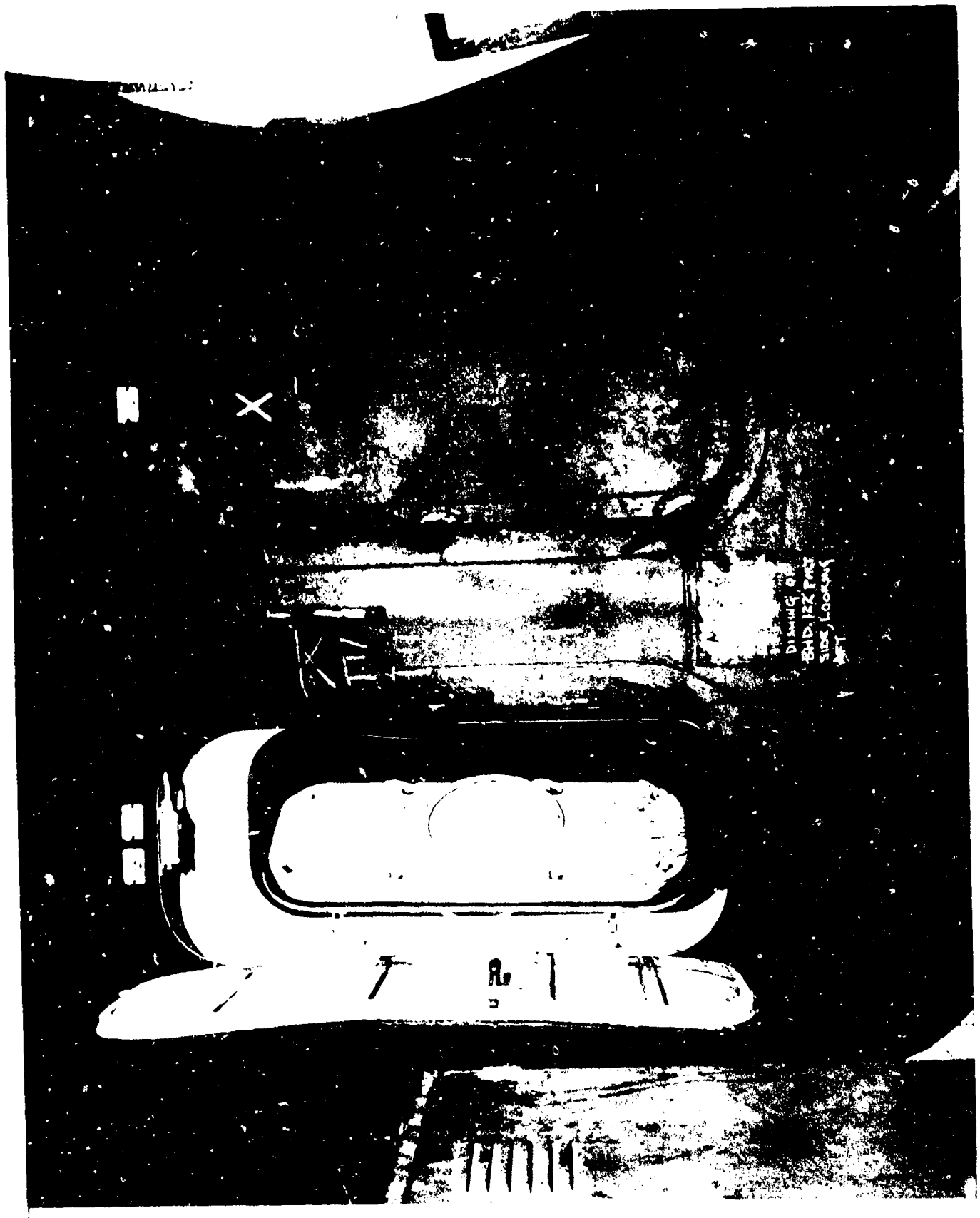


AA-CR-88-2103-8. No. 1 hatch cover, main deck, looking aft.



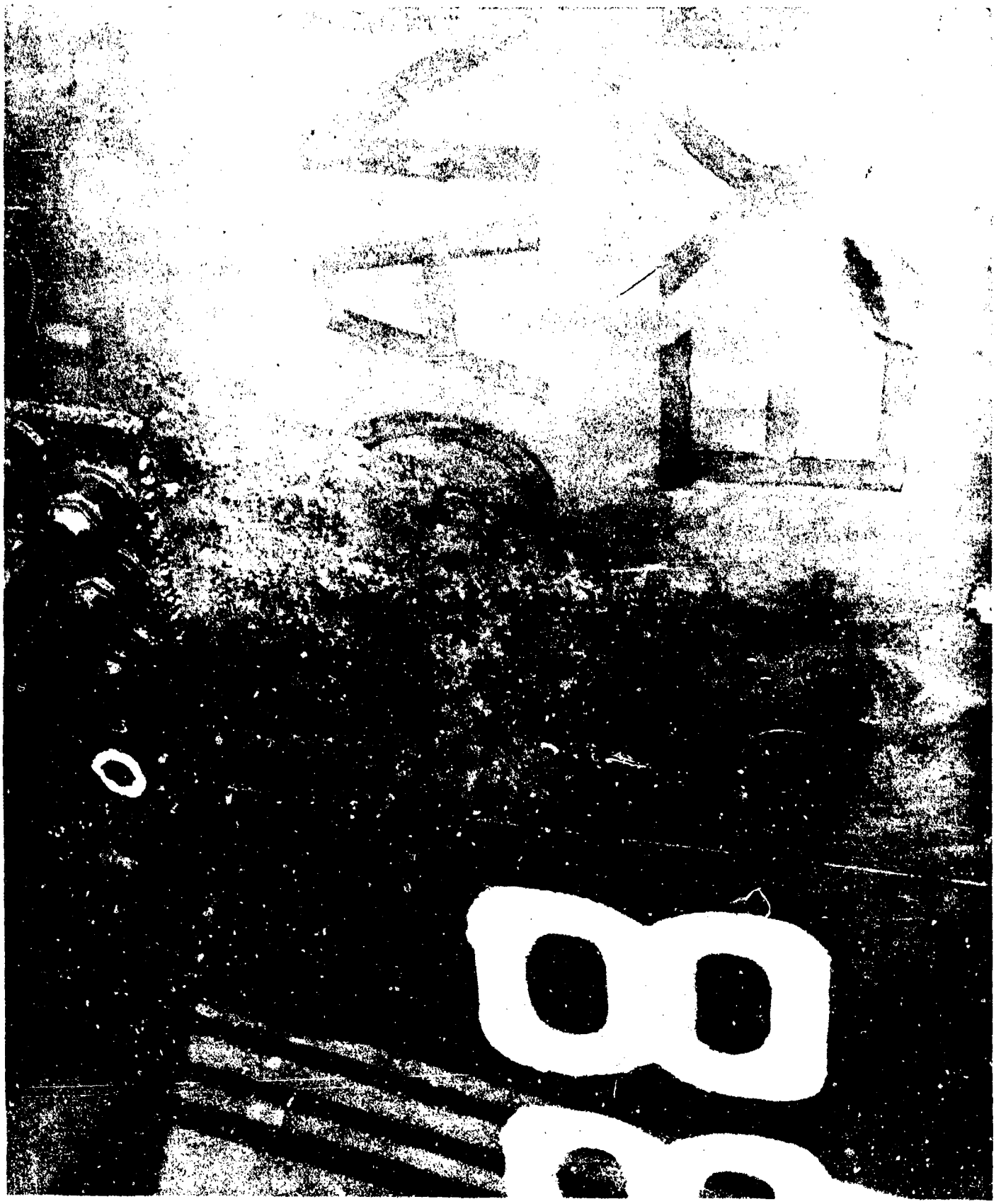
AB-CR-88-2103-9. No. 2 hatch cover, upper deck.

AA-CR-65-1738-1. Life raft on upper deck, port, showing burned area.



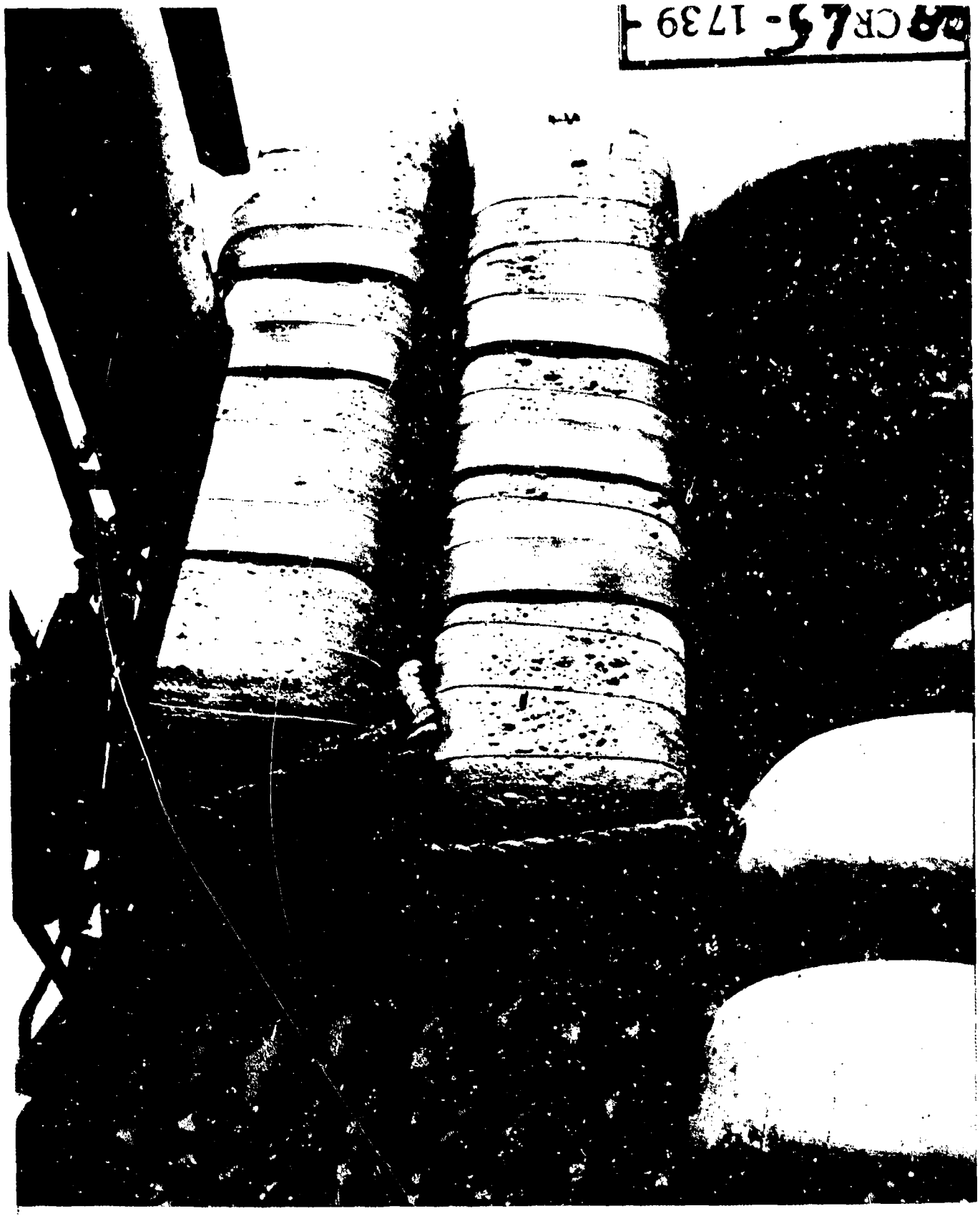
AA-CR-65-1738-9. Bulkhead 122, port main deck, looking aft.

AA-CR-65-1738-10. Paint blisters on signal bridge showing radiation angle.



AA-CR-65-1739-1. Hoist machinery room bulkhead. Localizing blistering of paint due to rust and moisture.

AA-CR-65-1739-2. Bulkhead showing localized blistering of paint.



AA-CR-65-1739-8. Paint blisters on life raft covering.

APPENDIX

SHIP MEASUREMENT DIAGRAM

TEST ABLE

SHIP MEASUREMENT DATA

Six scratch gages were installed to record relative movement between the main and upper deck. Gage locations and readings are tabulated on page 72 .

DECK DEFLECTION GAGES

SHIP U.S.S. BUTTE(APA68) TEST A

LOCATION			MAXIMUM	MAXIMUM	PERMANENT SET		REMARKS
FR. NO.	DECK	DIST. OFF ℄	COMP.	EXP.	DISTANCE	EXP. / COMP.	
22 1/2	Main	Center-line.	None	None	None	None	None
48	"	Stbd	0-0-18	"	"	"	"
48	"	Port	None	"	"	"	"
48	"	Stbd	0-1-4	0-0-4	"	"	"
48	"	Port	0-1-4	0-0-4	"	comp.	"
129	"	Stbd	0-0-8	0-0-2	0-0-2	exp	

APPENDIX

COMMANDING OFFICERS REPORT

TEST ABLE

REPORT NO. 11

COMMANDING OFFICERS REPORT

PART A - GENERAL SUMMARY

1. Target Condition After Test.

(a) Draft after Test:
F'w'd - 9'6" Aft - 17'6" Mean-13'6"
(Same as before test)
List - None.

Flooding - None.

(b) Structural damage: Very slight. Both stacks slightly dished on port side. Door No. 1-122-4 and surrounding bulkhead main deck at frame 122 port, dished in about 6 inches, adjacent door No. 1-122-6 slightly dished. Side of hatch at frame 64 port on 01 deck was slightly dished.

(c) Operability: No damage to machinery. Wiring in Radar Control Room A-0103-C and 40MM Ready Service Room A-0101-M damaged due to fire in mooring lines on top of deckhouse. All wiring and equipment in Radar Control Room C-0101 badly damaged due to fire in lines, fenders and life rafts on deck above. Wiring in remainder of deck house spaces starboard side frames 128-147 damaged due to same fire.

(d) Radiant heat from the bomb was sufficient to blister all paint directly exposed to the heat rays, to scorch exposed lines, wood, fire hoses, etc. and to start several top side fires in flaked down mooring lin es on top of deckhouses and in fenders, lines and life rafts on port side.

Estimated personnel casualties very light. Effects of radioactivity on personnel is unknown but due to the fact that ship was found completely " Geiger sweet " by Initial Boarding Team it is estimated that few men if any would have been incapacitated due to this cause. Effect of radiant heat on personnel would have been

sufficient to produce flash burns on face and hands of all personnel exposed to direct heat rays. Shading or light clothing would be sufficient to prevent flash burns.

All exposed personnel would have been blinded to varying degrees due to brilliance of the flash.

The shock and pressure waves may have caused temporary deafness, stunning, or secondary injuries due to falls.

It is estimated that no personnel inside the ship would have been injured in any way except for unknown effects of radioactivity and radioactive dust.

II. Forces Evidenced and Effects Noted.

(a) Heat: Direction of radiant heat can be fairly accurately determined by the "Shadowing effect" on superstructure bulkheads, estimates as follows:

Relative bearing of burst - 301° or 59° on port bow.
Elevation angle - 8°.
Range to burst 2000 yds.
Altitude of burst 800 feet.
Ships head 135° true.

Equal effects of radiant heat were evident on all surfaces directly exposed to bomb burst, from bow to stern and from truck to water line. There was no heat penetration from the bomb itself, any opaque object no matter how flimsy seemed to be sufficient to stop the radiant heat rays and protect anything in it's "Shadow".

(b) Fires and Explosions: Several small fires were started in topside gear such as mooring lines, fenders, life rafts, etc. All of these fires could have been readily extinguished by one man with a bucket of water or a CO_2 fire extinguisher. Two of these fires, being unattended, spread into adjacent material and caused considerable localized damage:

(1) Fire No. 1 started in the oil soaked mooring lines which were flaked down on starboard side of top of forward deck house, frames 27 to 36. Approximately 120 fathoms of 8 inch manila line plus three rolled up jacob's ladders plus four medium wood and manila fenders burned completely. The heat from this fire caused considerable damage to the overhead wiring in the Radar Control Room and 40MM Ready Service Room directly underneath. Maximum indicator in thermometer in 40MM Ready Service Room had been pushed into reservoir at top of thermometer indicating temperatures in excess of 150°F. No apparent effect on 40MM ammunition power samples. Both spaces contained Carbon Monoxide of .005 concentrate.

(2) Fire No. 2 started in balsa wood life raft outboard at frame 68 port, 01 deck. A two foot section of the raft plus an adjacent fender was burned before being extinguished by the Initial Boarding Team. No subsequent damage was caused.

(3) Fire No. 3 started in the oil soaked mooring lines, fenders and deck gear on starboard forward corner of after deckhouse frames 128 to 135, 02 deck level and/or in the oil soaked mooring lines flaked down on top of deck gear locker forward center of after deckhouse frames 128 to 132, 03 deck level. Fire could have been readily extinguished were any personnel on board. However, being unattended it spread rapidly into adjacent lines and deck gear, to the miscellaneous cleaning and deck gear inside the gear locker and to the balsa wood life rafts in the racks directly downwind. The following gear burned and was completely destroyed by the fire:

On top of deck gear locker:
100 Fathoms 6" manila
40 " 10" "

Inside deck gear locker:
about 500 lbs. of miscellaneous cleaning gear and deck gear plus wooden gratings.

On top of deckhouse stb'd:
60 fathoms 10" manila.
100 " 6" "
10 8'x8' tarpaulins.

On top of deckhouse stb'd: (Cont'd)

2	Two fold blocks & tackels.
10	Side cleaner's stages.
400	board feet shoring material.
2	large cocomatting fenders.
4	medium wood and manila fenders.
300	feet Army electrical cable.
75	square feet wood gratings under mooring lines.
18	20-man balsa wood life rafts with all equipment, stowed in racks outboard starboard side of deckhouse, frames 128 to 133 at 02 deck level.

At some time during the conflagration a cylinder of acetylene gas located at outboard starboard side of deck gear locker at frame 130 on 02 deck level, exploded, splitting wide open the full length of the flask. Other adjacent acetylene cylinders were unaffected.

All mooring lines, fenders, etc. were old and thoroughly oil soaked from prolonged use in Pearl Harbor. The heat from this fire caused severe damage to wiring and equipment in Radar Control Room C-0101 and considerable damage to overhead wiring in adjacent deck house spaces. When opened up by the Able Team all spaces below the after deckhouse down to the lowest level contained Carbon Monoxide from .005 to .02 concentrate.

All equipment was in it's normal stowage, however, it has long been recognized that the above stowage for mooring lines was undesirable and numerous requests for mooring line reels have been disapproved. In time of action these lines and fenders would not have been retained on board due to their oil soaked condition.

(c) Shock: The only apparent effect due to shock was the shattering of a few light bulbs, principally in Radio I, compartment B-0306-C, the knocking of loose gear adrift, principally in the wheel house and compartments on the navigation bridge, the shattering of two radio antenna insulators and the breaking of two mirrors in crews

wash rooms. No apparent direction of shock could be determined. There was no damage to structure of machinery.

(d) Pressure: The pressure wave apparently came from the direction of the bomb burst (59° on port bow). Both stacks were slightly dished on port side, canvas covers were torn, side of hatch at frame 64 port on 01 deck was slightly dished and both doors Nos. 1-122-4 and 1-122-6 were dished, the former about 6 inches. The pontoon hatch covers on both cargo hatches had been lifted and canted and many of them had fallen through into the space below. The pontoon covers themselves were undamaged.

The canvas hatch covers over the Pontoons were slightly torn at the edges but were otherwise intact. On No. 1 cargo hatch about 60% of the covers had fallen through, one had come out on deck, one of the four securing battens had been lifted up and broken loose. On No. 2 cargo hatch about 30% of the pontoon covers had fallen through, two securing battens were lifted up and torn loose. On the main deck the third from forward large pontoon hatch cover had fallen through crushing the fusilage of the airplane stowed below.

Apparently there is a pressure wave which caused the dishing in of the stacks and doors referred to above, this is more noticeable in areas where the pressure is pocketed as at doors 1-122-4 and 1-122-6. This pressure wave must then be followed by a vacuum or low pressure wave which allowed all the cargo hatch covers to be pushed up.

(e) There were no effects apparently peculiar to the Atom Bomb other than it's terrific emission of radiant heat.

III. Results of Test on Target.

(a) Effect on Propulsion and Ship Control.

None.

(b) Effect on Water-tight Integrity and Stability.

None.

(c) Effect on Gunnery and Fire Control.

No primary effect. Secondary effect, damage to wiring and equipment in Radar Control Rooms A-0103-C and C-0101 due to unattended fires on decks above.

(d) Effect on Personnel and Habitability.

Estimated effect on personnel has been covered in paragraph I (a) of this part. Effect on habitability NONE, except for carbon monoxide in spaces under after deck house due to unattended fires above. This would not be present if personnel were aboard to extinguish fires and ventilation system were operating.

(e) Total Effect on Fighting Efficiency.

Except for indeterminate personnel casualties the primary effect of the bomb of fighting efficiency of the ship was negligible.

IV. General Summary of Observers' Impressions and Conclusions.

The bomb, in it's present form is definitely superior in destructive power to anything developed heretofore but it is by no means "astronomical". It's lethal range is limited and protective measures are feasible. The bomb's present cost in money, time, and effort makes it's practicable use against naval targets dubious. The potentialities of future development appear to be almost unlimited.

V. Any Preliminary General or Specific Recommendations of the Inspecting Groups.

The following protective measures are apparent:

(a) Reduce to a minimum all exposed combustable materials such as lines, fenders, wooden life rafts, etc.

(b) Streamline exterior surfaces to eliminate pocketing and reduce blast effect.

(c) Reduce exposed personnel to a minimum and provide protection for all from radiant heat and blinding light. For this purpose, the lightest of shielding will suffice.

(d) Redesign stacks and uptakes to reduce entering pressure wave.

(e) Disperse ships maximum practicable.

PART C - INSPECTION REPORT

SECTION A - HULL

A. General Description of Hull Damage.

(a) Overall condition of vessel: Excellent.

(b) General Areas of Hull Damage: Slight dishing of stacks, doors 1-122-4 and 1-122-6 and hatch at frame 64 port, 01 deck.

(c) Apparent cause of Hull Damage: Pressure wave.

B. Superstructure.

(a) Description of Damage:

1. Bridge Area - None.

2. Stacks: Both stacks very slightly dished on port side.

3. After Deckhouse: Starboard side on top of after deckhouse, frames 128 to 140, all gear and equipment stowed in this area destroyed by fire.

(b) Cause of Damage in Each Area: Cause of stack damage - pressure wave. Cause of fire on after deckhouse - radiant heat setting fire to mooring lines flaked on deck.

(c) Evidence of Fire in Superstructure: Fire on forward deckhouse in manila mooring lines stowed there. Fire on after deckhouse in manila mooring lines, fenders, shoring, life rafts and deck gear stowed in that area.

(d) No comment.

(e) Constructive Criticism: Reduce inflamable gear such as manila mooring lines, fenders, wooden life rafts to a minimum and provide protected stowage for that minimum.

C. and D. No comments.

E. Weather Deck.

(a) and (b) No comment.

(c) Condition of Equipment and Fittings:

1. No comment.

2. Life rafts: One balsa wood life raft destroyed by fire at frame 67 port side and 18 balsa wood life rafts destroyed by fire in overhead racks frames 130 to 138 starboard side above 01 deck.

F. No comments.

G. Interior Compartments above Water Line.

(a) Damage to structure and causes: Bulkhead to ladder well, frame 64 port, 01 deck, slightly dished in due to blast pressure.

(b) No comment.

(c) Damage to access closures: Door 1-122-4 to compartment B-108-LT dished in about 6 inches. Door 1-122-6 to compartment B-108-A dished in about 2 inches. - caused by blast pressure.

(d) Condition of equipment within compartments: Excellent, except in Radar I A-0103-C and Radar II, C-0101, where wiring and equipment damaged by fires on deck above.

(e) Evidence of Fire: Interiors of Radar I A-0103-C and Radar II, C-0101 and passageway through door 01-137-1 damaged by heat from fires above. No evidence of actual fires in compartments.

(f) No comment.

(g) Estimate of Reduction in Water-tight Subdivision: Doors listed in (c) above not w[illegible]er-tight but are above main deck therefore no reduction in wate[illegible]ght subdivision.

H to Q. No comments.

R. Strength.

(a) Scratch Gauges: In compartment A-104-L, frame 48 port side, the Scratch Gauge indicated a downward thrust of one and one thirty second inch. In compartment A-104-L frame 48 starboard side, the Scratch Gauge indicated a downward thrust of one half inch. Both Scratch Gauges had returned to zero but not beyond. No movement indicated on other Scratch Gauges.

PART C - INSPECTION REPORT

SECTION B - MACHINERY

A. General Description of Machinery Damage.

There was no damage to machinery. No further comments in Section B.

PART C - INSPECTION REPORT

SECTION C - ELECTRICAL

A. General Description of Electrical Damage.

(a) Overall condition: Good.

(b) Areas of Major Damage: On the 01 deck frames 26 to 39 and frames 126 to 136.

(c) Primary Cause of Damage: Fires in mooring lines, fenders and deck gear stowed on the decks above caused all the damage.

(d) Operability of Electrical Plant: Everything operable except for a few lighting circuits in the damaged areas.

(e) Types of equipment Most affected: Cables.

G. Wiring, Wiring Equipment and Wireways (S62).

(a) Cable (Powder, Lighting and Supply): Power Cable to Radar Control Room C-0101 and to Radio III C-0107 scorched and insulation burned in places. Cable is still operable but should not be trusted. Lighting Cables 2F146-D and 2F146-A to compartment C-0102A, transverse passage at frame 01-137, and Fan Room C-01013E are short circuited and grounded due to fire on deck above.

Supply cable 1XFE182 for lighting in Radar Control Room C-0101 grounded and short circuited due to fire on deck above.

Supply cable 4XFE184 for lighting Radar Control Room A-0103-C and 40MM Ready Service Room A-0101-M grounded and short circuited due to fire on deck above.

H. to K. No comments.

L. Lighting Equipment.

(a) Lamps, Rough Service: Lamps Rough Service in Radar Control Room C-0101, compartment C-0102A, Fan Room C-1013-E, transverse passage and Radar Control Room A-0103-C were blackened due to fire on decks above but were not burned out.

(b) Reflectors: Reflectors in above spaces were blackened from smoke.

(c) Fixture Mounts: Two fixture mounts in transverse passage at frame 01-137 were burned and charred beyond use. One fixture mount at frame 01-35S burned beyond repair. All damage due to fires on deck above.

M. and N. No Comments.

P. and Q. No Comments.

R. Announcing Systems.

(a) to (d) No Comments.

(e) Reproducers: General announcing speakers in Radar Control Room C-0101 and on after deck house, 02 frame 138, damaged internally by fire beyond repair. Supply cable to speakers in compartment C-0102-A, C-0106-E and C-0101 grounded and short circuited so as to render speakers inoperative. Damage due to fire on after deck house.

PART C - INSPECTION REPORT

SECTION D - ELECTRONICS

A. General Description of Electronics Damage.

(a) Overall condition Fair, radar was the only equipment rendered inoperable.

(b) Areas of Major Damage: Radar Control Room forward A-0103-C, Radar Control Room aft C-0101 and antenna damage on the signal bridge.

(c) Primary Cause of Damage in Each Area: The damage in both Radar Control Rooms was caused by heat from fires in mooring lines, fenders and deck gear on decks above. Damage to antenna on signal bridge was caused by blast.

(d) Operability of Electronics Equipment:

1. Radar - All radar equipment except transponders inoperable.

2. Radio - All operable.

3. Sonar - Operable.

4. Loran - Operable.

5. Wavemeter O.A.A. - Inoperable.

(e) Types of Equipment Most Affected: Radar.

B. No Comments.

C. Surface Search Radar.

The SG 1 Radar is inoperable. Heat from the fire on the forward deck house burned the coax and power cables secured to the

overhead in Radar Control Room A-0103-C. The SC 1 Radar itself is intact.

D. Air Search Radar.

The SC 4 Radar is inoperable. Heat from the fire on after deck house baked the SC 4 transmitter, duplexer and preamplifier, located in Radar Control Room C-0101, to a condition estimated by inspecting personnel to be beyond field repairs.

E. to G. No Comments.

H. IFF Equipment.

The BMl in Radar Control Room C-0101 was damaged beyond field repair by heat from fire on deck above.

The BN gear in Radar Control Room A-0103-C is intact but inoperable due to coax being burned and shorted from heat of fire on deck above.

I. and J. No Comments.

K. Communication Antennae (Radio).

Two antenna insulators on 04 deck were broken due to blast.

L. to Q. No Comments.

R. Test Equipment.

Wavemeter 0.A.A.-2 located in Radar Control Room C-0101 was damaged beyond field repair due to heat from fire on deck above.

Classification (~~Cancelled~~) (Changed to CONFIDENTIAL)
By authority of Joint Chiefs of Staff Action of 15 April 1948
By [redacted] Date 24 Apr 51
1st Lt. AFSWP

[redacted] DATA
[redacted] ATOMIC ENERGY ACT

CONFIDENTIAL

Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398

TRC

10 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency (formerly Defense Nuclear Agency) Security Office has reviewed and declassified the following reports:

AD-366718	XRD-32-Volume 3
AD-366726	XRD-12-Volume 2
AD-366703	XRD-16-Volume 1
AD-366702	XRD-14-Volume 2
AD-376819L	XRD-17-Volume 2
AD-366704	XRD-18
AD-367451	XRD-19-Volume 1
AD-366705	XRD-20-Volume 2
AD-376028L	XRD-4
AD-366694	XRD-1
AD-473912	XRD-193
AD-473891	XRD-171
AD-473899	XRD-163
AD-473887	XRD-166
AD-473888	XRD-167
AD-473889	XRD-168

AD-366705

ST-A 28 JAN 80 made target

TRC 10 April 1997

SUBJECT: Declassification of Reports

AD-B197749	XRD-174
AD-473905	XRD-182
AD-366719	XRD-33 Volume 4
AD-366700	XRD-10
AD-366712	XRD-25 Volume 1
AD-376827L	XRD-75
AD-366756	XRD-73
AD-366757	XRD-74
AD-366755	XRD-72
AD-366754	XRD-71
AD-366710	XRD-23 Volume 1
AD-366711	XRD-24 Volume 2
AD-366753	XRD-70
AD-366749	XRD-66
AD-366701	XRD-11
AD-366745	XRD-62.

All of the cited reports are now **approved for public release; distribution statement "A" applies.**

Ardith Jarrett

ARDITH JARRETT
Chief, Technical Resource Center

copy furn: FC/DSWA (DASIAC)
KSC

Completed

R.W